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AUTHOR Taharally, L. C.
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ABSTRACT

A controlled study involving 60 randomly selected 4- to 5-year-old children from Guyana (South America) assessed whether providing the opportunity for fantasy play to children in nursery schools that do not provide such opportunity would have an effect on the children's level of symbolic, language, and cognitive ability. Subjects included 20 children each from urban, rural, and mining areas, with equal numbers of boys and girls from each area. At the time of the study, the children were all completing the first year of a 2-year nursery education program. Over a 30-day period, children in the experimental groups played for 25 minutes each day with toys believed to stimulate imaginative play, while children in the control group engaged in coloring or cut-and-paste activities. Research assistants observed, tape-recorded, and coded the behaviors of all subjects in the play situation on the first 2 days and last 2 days of the intervention period. Play was measured by a Symbolism Rating Scale; language was measured by comparing the average mean length of utterances; and cognitive ability was assessed using a story retell task and a story interpretation task. An analysis of variance was conducted to analyze differences among scores by group, region, and sex, and to measure gain scores of subjects from pre-tests to post-tests. Results indicate that the opportunity for fantasy play can have a positive impact on the level of symbolic play and language. Two data tables are provided. (Author/TJH)

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**FANTASY PLAY, LANGUAGE AND COGNITIVE ABILITY
OF FOUR-YEAR-OLD CHILDREN IN GUYANA SOUTH AMERICA**

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Paper presented at the AERA Annual Meeting in San Francisco,
California, March 27, 1989.

**FANTASY PLAY, LANGUAGE AND COGNITIVE ABILITY OF 4-YEAR-OLD
NURSERY SCHOOL CHILDREN IN GUYANA**

ABSTRACT

The purpose of this study was to determine whether providing opportunity for fantasy play to children in nursery schools which do not provide such opportunity, would have an effect on the children's level of symbolic play, language and cognitive ability.

Subjects were 60 randomly selected four-to-five-year-old children from Guyana, South America. 20 children came from the urban area, 20 from the rural area and 20 from a mining area. 10 children (5 boys and 5 girls) made up an experimental or a control group in each school in each region.

Over a 30-day period children in the experimental groups played for 25 minutes each day with toys believed to stimulate imaginative play, while the control group engaged in coloring or cut and paste activities. Research assistants observed, tape-recorded and coded the behaviors of all subjects in the play situation on the first two days and last two days of the intervention period.

Play was measured by a Symbolism Rating Scale, Language by comparing the average mean length of utterance and Cognitive Ability by a Story Retell Task and a Story Interpretation Task. ANOVA was used to analyze differences between scores by group, region and sex and to measure gain scores of subjects from pre-tests to post-tests.

The gain scores of Play on the Symbolism Index approached significance ($p < .064$) and gain scores for language were highly significant ($p < .001$). Neither group made significant gain scores on cognitive ability. It was concluded that providing opportunity for fantasy play to children not given this opportunity in school can have a positive effect on level of symbolic play and language in children of this age. Refinement and further testing of instruments and a longer intervention period are recommended.

INTRODUCTION

Programs for the education of young children in major cities of the nation are becoming increasingly multilingual and multicultural in nature as these cities experience an increase in the numbers of children entering the school system from different cultures. These children bring with them ways of playing and learning that are unique to their previous situation. Knowledge of the play behaviors of such children may be utilized for their continued development in this culture. This study looked at the play of one such group of children in Guyana South America where the author was involved in the establishment of a national nursery education program.

Research on play has established the value of this phenomenon to the growth and development of animals and humans. Recent research suggests that it is an important aspect of the communicative processes used in the socialization of children (Stern 1974; Sroufe and Waters, 1976). Cognitive psychologists believe that opportunity for play with diverse objects increases a child's repertoire of responses to these objects so that they eventually gain higher-order thinking skills through such playful involvement (Piaget, 1970, 1976).

It is believed that of the types of play observed, fantasy or imaginative play offers the greatest potential for the development of higher-order thinking skills. This type of thinking occurs when children relate to material in a symbolic way. In a pioneering study which investigated the quality of play among children in Israel, Smilansky (1968), concluded that Yemenite children who were from poor and disadvantaged homes were deficient in thinking skills when compared with middle-class Israeli children of European descent. She found that middle-class children engaged in more high quality fantasy play and displayed higher-order thinking skills, while children from poor homes who lacked the opportunity to engage in such play were found to be deficient in higher-order thinking skills. Smilansky attributed this lack in lower class children to their inability to think in a symbolic way.

The link between play and cognitive development was made as early as 1895 with the work of James Baldwin (Sutton Smith, 1971). Baldwin noticed that in play the child was constantly thinking, interpreting and inventing as he/she played with objects in the environment and that the knowledge thus gained helped the child to learn to predict consequences of events.

Among contemporary theorists, the work of Piaget (1951, 1962) and Vygotsky (1962, 1979) emphasize the role of language in cognitive development. Piaget believed that action in play is the basis of thought and that thought processes are expressed through language. Vygotsky emphasized the role of language in overall development and stressed that "progress in speech helps the child's thoughts to progress from a homogeneous whole to well-defined parts" (Vygotsky, 1962, 1979).

An important issue in cognitive-developmental theory (alluded to earlier in the Smilansky (1968) study), has been the role of symbolism in cognitive development. Symbolism occurs when the child in play uses objects to express and designate other things, for example when he/she substitutes a chair for a school bus. This ability to accept one object in place of another suggests a higher form of cognitive organization than does sensori-motor play, for example. Symbolic thinking is also believed to be a precursor of reading and understanding of numbers which are both represented symbolically. The question of whether young children in an ethnically and culturally different context possessed the ability for symbolic play was instrumental in the formulation of this study.

Purpose of This Study

This study provided opportunity for free play among four-year-old children in three nursery schools in Guyana and assessed the effect of this play on children's language and cognitive ability. Two general questions were considered.

1. Will opportunity for fantasy play with selected materials result in higher levels of symbolism as evidenced by the level of children's language and play sequences?
2. Will children's opportunity for fantasy play with selected materials result in increased cognitive functioning as evidenced by their performance on related cognitive tasks?

METHODOLOGY

1. Subjects

Three nursery schools were randomly selected for this study; each from an urban, rural and mining area of the country. A total of 60 four-year-old children were randomly selected from the three schools in the following proportion: 20 urban, 20 rural and 20 mining such that there were an equal number of boys and girls from each school. An experimental and control group each consisting of 5 boys and 5 girls was set up in each school. The children were all completing the first year of the two-year nursery education program, and they all lived within a five-mile radius of their respective school.

Rural children came mainly from the sugar belt and its environs. Their parents were mostly skilled and semi-skilled workers employed in the sugar industry to plant, reap and transport cane to the mills. Approximately 10 percent of these parents were professional workers in medical services offered by the industry and in accounting and payroll services. In the mining area, parental occupations were mainly skilled, technical and professional jobs in the Bauxite Industry.

Parents were a more homogeneous group because of their ethnic background, living conditions and shared recreational facilities. Urban parents on the other hand, held a wide range of occupations. Some were unskilled, semi-skilled and skilled workers, while others were business and professional workers. This was the least homogeneous group in terms of occupations, housing conditions and ethnic background. .

2. The Instruments.

(1) Play: The Symbolism Rating Scale

The Symbolism Rating Scale was devised for this study. It includes play categories previously identified, (Piaget, 1952; Smilansky, 1968; Niccolich, 1979; Mc. Loyd, 1979; 1980) and now rearranged and scaled by this researcher on a developmental continuum. The scale consists of:

1. Functional Play (FP)
2. Constructive Play (CP)
3. Dramatic Play involving Substitution (DPS)
4. Dramatic Play involving Animation (DPA)
5. Dramatic Play involving Transposition (DPT)

This scale represents a developmental continuum on which functional play is the lowest and dramatic play involving transposition is the highest. The number of incidents of play occurring at each level over the 10 minutes of the pre-test and 10 minutes of the post-test was tabulated for each child and weighted so that Functional Play incidents scored 1 and Dramatic Play, Transposition scored 5.

(ii) Language: Measured by the Mean Length of Utterance.

Language production was measured using the Mean Length of Utterance as the unit of analysis. The children's language was recorded on audiotape for five minutes per day on the first two days (pre-test) and last two days (post-test) of the experiment while their play behavior was also being recorded. Their verbalizations were later transcribed on a score-sheet. Research assistants tallied the number of morphemes in each utterance and calculated the mean length of utterance. The total number of morphemes in each utterance was tabulated for each child during the two 5 minute observations (both in the pre-test and post-test). The average MLU over the two 5-minute observations was calculated for each child and these scores were analyzed by group, region and sex.

(iii) Cognitive Ability: Story Retell and Story Interpretation Tasks.

The Story Retell and Story Interpretation tasks were used to measure cognitive ability by evaluating performance on the specific skills of recall, comprehension and synthesis. Two stories, The Lost Doll and A Puppy named Scamp were used. In the Story Retell Task using the Lost Doll, 3 main ideas were contained in the story. Scoring was based on the child's ability to:

- (i) recognize the main features of the story.
- (ii) demonstrate ability to recall
- (iii) demonstrate sequencing skills.

Scores from 0-3 were awarded for completion of this task.

The Story Interpretation Task was devised as a second measure of cognitive ability and required the skills of comprehension, interpretation and conceptual integration. It differed from the first cognitive task in that it did not require verbal skills for completion; but it was similar in that this task also tested the skills of comprehension and sequencing. Trained research assistants administered the task which required children to arrange in sequence 4 cards each 8 1/2" by 11 1/2". These cards told the story of A Puppy named Scamp. The research assistant in each case read the story once to each child during the pre- and post-test periods. Each child was then asked to sort the cards in sequence without the use of any other form of illustration or prompting after hearing the story. Scoring of the task was done in the following way:

sequential sorting of cards 1 & 2 = 1
 sequential sorting of cards 1, 2 & 3 = 2
 sequential sorting of cards 1, 2, 3 & 4 = 3
 Any other variation received no score.

Reliability of Measures.

Tests of reliability were conducted for the Symbolism Rating Scale (Levels of Play) and the two story tasks. The Mean Length of Utterance is an established measure of units of speech (De Villiers, 1978).

To assess the reliability of the Symbolism Rating Scale, a field test was carried out using 20 uninvolved subjects from 2 selected nursery schools. Data were collected after these children engaged in play for 10 days with a set of materials similar to that used in the study under the same conditions as described for the experimental group. Four research assistants using audio-tapes described the play behaviors and recorded the language of the children at play after a period of 10 days of exposure. The number of time-periods in which a child received a score on a level of play was multiplied by the value of that level to become his/her "symbolism" score. The total score on this scale for 40 children was obtained from which 20 were computed as the odd periods and correlated with 20 for the even periods. The Spearman Brown formula was then applied to r to obtain the reliability coefficient. The reliability after 10 days was .35. The play period was extended for another 10 days and testing was redone. A reliability of .68 was obtained.

The Story Retell Task and the Story Interpretation tasks were administered to the same subjects used in the field-test of the Symbolism Rating Scale. 26 scores were tabulated after eliminating zeros. The paired observations were correlated and a coefficient of $r=.74$ was obtained. Both tests were re-administered to another group of 30 children and the Spearman Brown formula was used to obtain a coefficient of .69.

3. Training of Research Assistants.

20 research assistants (twelve from the schools involved in the study and eight from schools selected for pilot-testing of instruments) attended a five-day training program. During this time research assistants were able to:

- (i) Recognize the various levels of symbolism in children's fantasy play, use the morphemes as a unit of measure for language, use table activities in the nursery classroom.
- (ii) Discuss and clarify operational definitions.
- (iii) View one hour of video-taped material made specifically for the training session in which a group of 5 children played with materials similar to those used in the study. This tape was made at a school east of the city and the children and teachers had no involvement in the study proper.
- (iv) Use the Symbolism Rating Scale to code behaviors identified in segments of video-tape.

(v) View video-tape recordings of the administration of the two story tasks and practice scoring procedures.

(vi) Provide opportunity for establishment of inter-rater reliability for scoring of instruments.

Inter-observer Reliability.

Twenty research assistants met with the investigator for five days, between 9.00 a.m. and 5.00 p.m. Assistants were trained in the administration and scoring of instruments. They viewed several segments of video-tapes containing occurrences of each category of play and scored them on sample scoring sheets. The number of agreements was tallied and inter-rater reliability was computed as : $\text{Rate of Agreement} = \frac{\text{Agreement of 2 observers times 100}}{\text{Observations of E1} + \text{Observations of E2} + \text{En}}$. Two test runs were done with coefficients of .65 and .85. The average of .75 was taken as the index of inter-rater agreement.

To determine the inter-observer agreement on calculation of **Mean Length of Utterances**, a transcript of children's utterances consisting of 20 sentences was given to the research assistants to code after they were taught to calculate MLUs. Inter-observer agreement was .97.

To determine the reliability of the **Symbolism Rating Scale**, student teachers at a teacher's college were provided with lists containing definitions of the various levels of play and were asked to examine these definitions and match them with an example of an utterance from the set provided. The aim was to determine whether typical utterances occurring in the play situation could be classified into the play categories with relative ease given the descriptions of each category. Rate of agreement was calculated using the formula : $\text{Rate of agreement} = \frac{\text{Agreement of 2 observers times 100}}{\text{Observations of E1} + \text{E2} + \text{En}}$. An agreement rate of 85% was obtained. Some difficulty was experienced in differentiating DPS and DPA.

Inter-observer agreement on the **Story Retell** and **Story Interpretation Tasks** was obtained during the final day of the training session for research assistants. The Story Retell and Story Interpretation tasks were administered to two children who attended the school that was being used as a training center. The researcher demonstrated the method once more to review the procedure covered on video-tape earlier.

The two sets of scores were correlated and the Spearman Brown formula was applied to the result to obtain the coefficient of $r = .84$.

A major concern was the establishment of content reliability. It was necessary to find out whether the Story Retell and Story Interpretation Tasks were accurate measures of cognitive ability as represented by comprehension, recall, interpretation and conceptual integration. Teacher-trainees scored their view of the adequacy of each measure against the definitions given on a five point scale. 46% felt that the measures were "extremely adequate", 31% felt that they were "very adequate". The remaining 23% rated measures between "somewhat adequate" and "inadequate".

4. Intervention Procedure.

The experimental treatment lasted for a period of 30 days. The treatment procedures occurred between 8.30 and 9.30a.m. each day. Two research assistants were assigned to each of the experimental and control groups. These assistants observed a group of 5 children at a time in each condition. A pre-arranged set of play materials was selected for the experimental group. The play materials were:

1. Dress-up clothes, at least six different pieces of old clothing; two pairs of old shoes, two hats and two scarfs,
2. a doll family consisting of mother, father and three children - boy, girl and baby,
3. a set of wooden doll's furniture, a set of doll's pots and pans,
4. a set of three animals, dog, horse and lion all made of synthetic rubber,
5. a set of table blocks,
6. a set consisting of two packing cartons, each measuring 18" x 15 " x 9 ", 4 feet of string and 2 empty 2 liter cans.

Children's order of participation in play in the experimental group was coded ABCDE, FGHIJ and the order rotated continuously for the treatment. For the first 10 days, sets 1 and 2 of the toys listed were available for play, sets 3 and 4 were added at the beginning of the second ten-day period and sets 5 and 6 at the beginning of the last 10 days. This was done so children would have opportunity for more realistic material in the earlier phase of the treatment period and also to guard against the effect of boredom with materials toward the intermediate and final stages of play periods.

Children in the control groups were engaged in cut and paste activities, collages, puzzles or crayoning or playing table games. During the first two days of the study, both groups were observed to facilitate the collection of baseline information. On day 3, materials were withdrawn from the control group. The experimental group continued their play sessions. Both groups were again observed on days 29 and 30.

The research assistants took seats near enough to hear children but otherwise remained as unobtrusive as possible as they watched the children play. A time-sampling technique was used to observe each child for a 25 minute play period. The Symbolism Rating Scale was used to code play behaviors. Children's language was recorded on audio-tapes, and were transcribed and recorded after school ended for the morning. The Story Retell Task and the Story Interpretation Tasks were administered consecutively to individual subjects sometime between 10.30 a.m and 12.30 p.m.

RESULTS

The variables were levels of fantasy play, language production and cognitive ability (dependent) and gender, treatment and geographical location (independent). The data are organized in a 3 x 3 x 2 factorial design with 5 observations per cell. Analyses of variance were used to find out what differences existed between experimental and control groups on the dependent variables after intervention. Results are reported as pre- and post-test gain scores and analyses of variance on each of those sets of scores.

Analyses of variance were carried out on the pre- and post-test scores of the five levels of the Play behavior Scale separately. A Symbolism Index was constructed so that Symbolism = Dramatic Play Substitution + Dramatic Play Animation + Dramatic Play Transposition. The scores on the MLU which measured Language performance were reported as descriptive and statistical data. Analyses of variance were also carried out on the Story Retell and Story Interpretation Task, separately and then as a combined measure of cognitive ability.

The null hypotheses tested were that there would be no significant differences in levels of play, language and cognitive ability between experimental and control groups with respect to condition (control vs. experimental), region (rural, mining or urban) and gender (male, female).

(1) Levels of Play.

The ANOVA performed on gain scores for Functional Play showed a significant main effect for group and region ($p = .02$ and $.04$ respectively). Region entered into a significant sex by region interaction ($p=.03$) also. The three-way interaction of sex by group by region on gain scores fell short of significance ($p=.11$).

At the level of constructive play, there was a main effect difference for group only only ($p=.02$) while on dramatic play, substitution, there were significant main effects for region ($p=.03$), but group, ($p=.14$) fell short of significance. There was a significant group by region interaction ($p=.02$). Significant gains occurred for both boys and girls from the mining region, if they were in the experimental group.

At the level of Dramatic Play, Animation, an ANOVA performed on gain scores showed no significant main effects. There was however, a significant three-way interaction of gender, group and region ($p=.03$). This interaction appears to be a consequence of mining area children who were girls in the experimental group performing better than any other group. An ANOVA performed on gain scores on Dramatic Play, Transposition showed main effect for group and region ($p=.03$ and $.02$). The group by region interaction was also significant ($p=.01$).

ANOVAS performed on the Combined Play levels, the Symbolism Index, confirmed the superior performance of mining children in the experimental group. There was a significant main effect for region ($p=.02$) but main effect difference for group fell just short of significance ($p=.064$). Nevertheless, there was a significant two-way interaction of region and group ($p=.01$)

INSERT TABLE 1 HERE

(ii) Language.

Language was measured by the Mean Length of Utterance. An ANOVA performed on gain scores showed main effects for group ($p=.001$) and sex ($p=.01$). There were no significant interactions but two-way interactions for region and group and for sex and group fell just short of significance ($p=.072$ and $p=.07$). These analyses revealed strong support for differences according to gender of subjects and according to their geographic location. The Scheffe procedure revealed differences in favor of boys in the experimental groups and children from the mining area. There were also significant differences in favor of children in the urban area.

(iii) Cognitive Ability.

On the Story Retell Task, there was a significant main effect for region ($p=.03$). This was due to the higher performance of boys in the control group and girls in the pre-test experimental conditions in the urban regions. Main effect differences for group fell just short of significance ($p=.063$). ANOVA on post-test scores revealed that the performance of children in the experimental group was higher than that of the control group ($p=.001$). An interesting gain was shown for girls in the experimental group from the rural area.

On the Story Interpretation Task, post-test scores revealed that girls in the experimental group from the mining region scored just as well as boys in the experimental group from the urban region. Analysis of variance carried out on the post-test score showed no significant main or interaction effects.

The Story Retell and Story Interpretation Tasks were combined and treated as a single measure of cognitive ability. This was appropriate since these two measures were alternate forms of a test. ANOVA on gain scores showed no significant main or interaction effects despite the strong performance shown by rural children in the experimental group.

SUMMARY OF RESULTS

The results of the test of hypothesis of no difference between the experimental and control group on levels of play is accepted, since performance on play as computed by the Symbolism Index, fell just short of significance ($p=.064$). It should be noted that on every level of play between levels 3 to 5, there was a highly significant difference by group in favor of experimental groups. There were regional differences in favor of children from the mining areas. There were also differences in groups by gender, again in favor of girls in the mining area.

There was a highly significant difference in performance between the experimental and control subjects on language performance ($p=.001$). There were also significant differences by region and by gender. Boys in the urban area performed best on the language measure.

The hypothesis of no difference between experimental and control groups on measures of cognitive ability is accepted. Although experimental subjects were significantly higher on cognitive ability on the post-test, ($p=.001$), this difference was mainly on Story Retell, not on Story Interpretation. There were also no significant differences by region or gender on the tests of cognitive ability.

The intervention was successful in effecting improvement in performance for play by region and gender, and language by group and gender. These are encouraging data which indicate strong support for the thesis that play and language can be improved by intervention. Although there was not clear support for this opportunity to affect subsequent cognitive performance as measured by the story tasks, there were trends which suggested some potential for this effect was present.

The results are consistent with findings in the literature and replication or follow-up studies will be useful in discovering other kinds of explanations for play, language and cognitive ability of four-year-old children in the setting studied.

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DISCUSSION

(1) Play

It was expected that the children in the experimental group who were given the opportunity for play with materials, chosen to stimulate fantasy play, would demonstrate higher levels of symbolism in their play than would children in the control group. It was predicted that level of language production measured by mean length of utterance would increase over time and that there would be improved performance on cognitive ability tasks as a result of the effects of performance on play and language variables. Other expectations related to differences among groups based on location of school and gender of subjects.

Although the results on the Symbolism Index, used to assess the Play intervention did not reach significance, there were strong indications in favor of such a difference between control and experimental groups on four out of five levels on the Symbolism measure. In the category of functional play, the very high post-test performance of girls in the experimental condition in the mining area was somewhat surprising in the context of this study. It was expected that urban girls would perform better than other groups since they appeared more likely to fit the pattern of middle-class children who were exposed to more opportunities for playful learning. Such a finding would have been more congruent with studies done in other countries among economically advantaged children. Two possible explanations for this pattern would be that mining area girls knew each other better since they may have played with each other more outside of school, and also that they already had well-developed play skills so that they did not lose any time in negotiating the elementary transactions of play behaviors that children usually have to settle before playing.

Performance on the other levels of play also held for this group of children in the mining area. The results would suggest that children in the mining area were more representative of a typical middle-class group described in the literature. These children also constituted an ethnically homogeneous group (Black in this case) and a socially homogeneous group which shared the same employer, housing and recreational facilities (The Bauxite Company in this case).

It is clear that the experimental manipulation had a very strong impact among these children. Girls in the mining region performed better than any other group and their performance reflects the same kind of sensitivity to roles and role-playing on the part of girls found in previous studies on play (Rosen, 1974; Smith and Dutton, 1979)

The results on the Play Index suggest that the intervention produced substantial results in the direction expected. It appears that a longer period of opportunity for play would have produced the required significance. Some time was probably spent in children just getting used to the freedom to play each day in small groups and in getting to know the members of the groups which were obtained by random assignment. Homogeneity in group seems to be a strong factor in the superior performance of the group in the mining area. These children concentrated on their play more and enjoyed the play periods more than the other groups. Perhaps this was easy since they already knew each other socially. This factor may have helped them gain more from the play situation.

(ii) Language

The results on language indicate that children from the urban area scored highest. It was found that boys in the experimental groups scored highest. This finding was unexpected. It was predicted that girls would be more verbal, since this is consistent with most of the studies done in the area of play and language. It was also expected that the urban children as a group would score highest on this measure since they attended school in an environment where people tend to use oral language more. In addition, the city is also the center of commercial and civic activity and contains more libraries, parks, museums, zoos and other potentially rich sources of language expression.

An explanation for the superior performance by boys may also lie in the cultural roots of verbal and friendship transactions in Caribbean societies. Males have traditionally been encouraged to have friends, be loud and boisterous and engage in extraverted kinds of play behaviors. Females, on the other hand, have generally been raised to be polite, quiet and industrious. During pilot sessions, it was noted that although girls were the ones who chose the play themes and usually set the patterns of interaction, once the roles got going, they would recede to the background and quietly get on with their "work", as the boys engaged in more physical and verbal play.

(iii) Cognitive Ability

Establishing a link between play, language and cognitive ability is difficult since there is no one-to-one correspondence among these factors (Niccolich, 1977). In this study, there were indications that rural children, if their play were qualitatively better, had the potential for demonstrating a link between these variables.

The intervention had no impact on performance on the Cognitive Ability Measures. There were some trends visible in the post-test ANOVA where there was a significant main effect for group but an overall effect was lost in the performance of other groups on this measure.

Pre-test results on cognitive ability indicated a predisposition on the part of mining children to perform very well on the story tasks. Urban girls also dealt with this task successfully but an unexpected finding was that rural girls performed best on this task. This seemed unusual and one possible explanation by research assistants attributes this to better listening skills. It has been suggested that rural children appeared to have less distraction in their environment and thus were more equipped to deal with a story task that required listening and retelling. Prior to this study, on a project among native Indians in the remote savannas of the country, this researcher found that Indian children on Reservations knew by the beat of a Land Rover's engine who was approaching their village from miles away. They could also tell by the sound of an airplane engine

what size and make the plane was. This finding may have important implications for how children learn in crowded and noisy environments.

Generally, all groups seemed to perform better on the Story Retell than on the Story Interpretation Task. The Story Interpretation seemed to be a deviation from regular story-telling experiences and children appeared unwilling to deal with the novel demand of this task. This type of measure should be explored more since it seems to have great possibility for enhancing cognitive development among children who cannot deal well with time sequencing.

Although the findings are inconclusive on cognitive ability, it is clear that opportunity for play resulted in increased symbolism in children's play and that mean length of utterance is an appropriate way to measure this. The fact that improved symbolism did not transfer to positive gains on the cognitive ability measure suggests that perhaps more efficient and reliable methods of testing for cognitive gains is needed. It is very clear that opportunity for play leads to higher levels of symbolism in play.

CONCLUSIONS

Although there is not overwhelming evidence for the research premise as a whole, the results of this study are significant since they represent a small, but important step in discovering how Caribbean children performed on three measures of play, language and cognitive ability. An important reason for undertaking this study was to discover whether the ability to engage in fantasy even existed among children in the cultural context studied. The answer was unequivocally positive.

A comparison of the content of the play of these children with an average middle-class sample, say in this country, would show similarities in the way children deal with objects and experiences in their culture. For example, friendly ghosts are a familiar fantasy theme here. In this study, an object of both fear and fascination was the Rastamen, members of the Rastafarian movement. These relatively new people to Guyanese neighborhoods, were the "bogey-men" of the children and their play on this theme reflected a need to understand and master the fearful.

Restaurant, family and hospital themes were similar to what one might find elsewhere except that in the context of this study, doctors and nurses were much more firm and authoritative with young patients. The play themes were comparable, but the nuances of expression and responses were reflective of the behaviors of adults in that environment. Children in this cultural context were also not as verbal as children in a typical preschool in a middle-class environment in the U.S. They were not as a group likely to "perform" for the adults and would try to speak to their friends so that the adult wouldn't hear.

This project demonstrated clearly that opportunity for play can make a difference in the amount and quality of play of children. It is valuable in terms of informing educational policy leaders indirectly of the importance of play to the growth and development of young children. It is also helpful in helping parents and teachers realize that play could be a valuable learning tool. It was also very rewarding to observe, from time to time, the apparent enjoyment of the children as they played.

It is recommended that further research is undertaken in the various aspects of the social, emotional and cognitive growth of children in the Caribbean. More intensive testing of these instruments is also recommended in order to ensure that we are really measuring what we seek to measure. A possible follow-up to this study, for which the information already exists is a content analysis of the play of the children. This should yield interesting information on play and language interactions and the unique negotiations that children in that culture enter into. Every additional piece of evidence would provide valuable information not only for teachers in those countries but for teachers working with children from Caribbean cultures in this country.

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Table 1. Significance of Post-test Scores

Variables	² Group	Region	Sex	Region by Group	Sex by Region	Sex by Group	Sex by Region by Group
A. Symbolism Rating Scale (Levels of Play)							
1. Functional Play	.030		.032 (girls higher)			.026 (exp. girls higher)	.064 (exp. girls higher)
2. Constructive Play	.036						
3. Dramatic Play, Substitution	.016	.008 (mining higher)		.025 (exp. mining higher)			
4. Dramatic Play, Animation	.018	.055 (mining higher)		.039 (exp. mining higher)			
5. Dramatic Play Transposition	.001	.021 (mining higher)		.019 (exp. mining higher)			
6. Symbolism Index (Levels 3, 4, 5)	.003	.013 (mining higher)		.015 (exp. mining higher)			
B. Language, MLU							
	.001	.022 (urban higher)	.052 (boys (higher)				
C. Cognitive Ability							
1. Story Retell	.001						
2. Story Interpretation							
3. Combined Scores	.001						

¹p < .05.²Experimental group higher.

Table 2. Significance of Gain Scores

Variables	² Group	Region	Sex	Region by Group	Sex by Region	Sex by Group	Sex by Region by Group
A. Symbolism Rating Scale (Levels of Play)							
1. Functional Play	.026	.046 (mining higher)	.03 (girls higher)		.034 (girls mining higher)		.11 (exp. girls mining higher)
2. Constructive Play	.018	.033 (mining higher)					
3. Dramatic Play, Substitution	.135			.021 (exp. mining higher)			
4. Dramatic Play, Animation					.059 (girls mining higher)		.026 (exp. girls mining higher)
5. Dramatic Play, Transposition	.031	.020 (mining higher)		.01 (exp. mining higher)			
6. Symbolism Index (Levels 3, 4, 5)	.064	.023 (mining higher)		.012 (exp. mining higher)			
B. Language, MLU	.001		.015 (boys higher)	.072 (exp. urban boys higher)		.072 (exp. boys higher)	
C. Cognitive Ability							

¹p < .05.²Experimental group higher.